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Docket No.: MIO 0082 N2/40509.292

Remarks

Claims 1-11 are pending in the present application. Claims 1 and 7-11 are amended, herein for clarification. No new matter has been entered.

Objection for Informalities

Claims 1, and 7-11 were amended to delete the word "nitrogen" before "nitrogen-containing precursor". Accordingly, the typographical errors in the claims have been deleted, and the objection for informalities should be removed.

Rejection under § 112, ¶ 2

Claims 1-11 were rejected under § 112 based on the examiner's assertion that the recited term "flat" is indefinite. Per the examiner suggestion, the claims now recite a "substantially constant temperature distribution". Accordingly, the rejection should be removed.

Rejection under § 103(a)

Claims 1 and 3-11 were rejected under 35 USC 103(a) as being unpatentable over Schuegraf et al (US 5,624,865) in view of Lee et al (US 2002/0068466). Claim 2 is rejected as being unpatentable over Schuegraf in view of Lee as applied to claim 1, and further in view of Thakur (US 5,407,534). The rejections are respectfully traversed.

Independent claims 1 and 7-11 all recite, *inter alia*, that a substantially constant temperature distribution is maintained across the semiconductor substrate as the first precursor is chemisorbed and as the second precursor is reacted with the chemisorbed precursor as recited in the claims. This recitation is fully supported by the specification. *See generally* ¶ [0016].

Schuegraf, which fails to teach ALD, also fails to teach a substantially constant temperature distribution as recited in the claims. Scheugraf teaches an approximate range of deposition temperatures and an approximate range of reoxidation anneal temperatures; however, fails to teach a temperature distribution across the semiconductor substrate during the formation of a dielectric layer, much less a substantially constant temperature distribution as recited. Lee also fails to teach this claimed invention. Lee fails to mention the temperature of the semiconductor substrate. Lee states that the *reaction chamber temperature* of 450° C may be maintained, but Lee does not teach the temperature of the semiconductor substrate, nor does Lee teach or suggest a substantially constant temperature distribution across the semiconductor

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substrate as recited in the claims. Furthermore, Lee also fails to teach a substantially constant temperature distribution across the semiconductor substrate: 1) as the silicon-containing precursor is chemisorbed, and 2) as the nitrogen-containing precursor is reacted with the chemisorbed silicon-containing precursor. Lee fails to teach maintaining the reactor chamber at a set temperature through multiple processing steps; therefore, Lee fails to teach a substantially constant temperature distribution across the semiconductor substrate.

Thakur, which does not teach ALD, also fails to teach a temperature of the semiconductor substrate, much less a constant temperature distribution across the substrate. Accordingly, none of the cited references, teach or suggest a substantially constant temperature distribution across the semiconductor substrate as recited in the claims.

Double Patenting Rejection

Claims 1-11 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 6,551,893 (Zheng et al) in view of U.S. Patent No. 5,407,534 (Thakur). A terminal disclaimer as previously been filed and rejected by the examiner. As a result, applicant respectfully submits a new terminal disclaimer signed by an attorney of record pursuant to 37 CFR 1.321. Consequently, the double patenting rejection is respectfully traversed.


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Conclusion

The Applicants respectfully submit that, in view of the above amendments and remarks, the application is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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